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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Preparing Activity: KSC

NASA/KSC-27 13 43.00 98 (October 2007)
Superseding
NASA/KSC-27 13 43.00 98 (April 2006)

NASA/KSC GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2009
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10/07

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SECTION 27 13 43.00 98

COMMUNICATIONS SERVICES CABLING
10/07

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NOTE: This specification covers the requirements for basic wiring materials and methods applicable to most types of electrical construction for small jobs.

Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable items(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments and suggestions on this guide specification are welcome and should be directed to the technical proponent of the specification. A listing of technical proponents, including their organization designation and telephone number, is on the Internet.
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PART 1 GENERAL

1.1 REFERENCES

****
NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text are automatically deleted from this section of the project

specification when you choose to reconcile references in the publish print process.
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The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. AIR FORCE (USAF)

TO 31W3-10-12	(1986) AF Communications Service Standard Installation Practices, Outside Plant Cable Placement

1.2 GENERAL REQUIREMENTS

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NOTE: If Section 26 05 00.00 40 COMMON WORK RESULTS FOR ELECTRICAL and Section 26 00 00.00 20 BASIC ELECTRICAL MATERIALS AND METHODS are not included in the project specification, insert applicable requirements therefrom and delete the following paragraph.
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Section 26 05 00.00 40 COMMON WORK RESULTS FOR ELECTRICAL and Section 26 00 00.00 20 BASIC ELECTRICAL MATERIALS AND METHODS apply to work specified in this section.

1.3 SUBMITTALS

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NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project. Keep submittals to the minimum required for adequate quality control.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, use a code of up to three characters within the submittal tags following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army projects.

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Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that reviews the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Submit manufacturer's catalog data for the following items:

Inner Duct
Duct Seals
Cable Rack Hooks
Cable Ties

PART 2 PRODUCTS

2.1 INNER DUCT

Inner duct must be [Sterling Engineered Products, Inc., Part No. PE5007] [_____] or equal, and installed in continuous lengths.

Inner duct must be four channels of polyethylene with a nominal 25 millimeter 1 inch size.

2.2 DUCT SEALS

Duct seal must be [Insta-Foam] [_____] or equal. Fire stop sealant must be silicon foam [Insta Fire Seal] [_____] or equal. Both are manufactured by [Insta-Foam Products, Inc., Joliet, Illinois, 60435] [_____] or approved equal.

2.3 CABLE RACK HOOKS

Provide the necessary cable rack hooks compatible with the existing cable racks to support the cable and its associated splice cases in manholes, vaults, and terminal rooms. These cable hooks must be hot-dipped galvanized, cut from channel steel with rounded top surface 38 millimeter 1-1/2 inches wide, [A.B. Chance Co. No. 1133] [_____] or approved equal.

2.4 CABLE TIES

Cable ties must be PVC material made by [Ty-Rap] [_____] or equal.

PART 3 EXECUTION

3.1 DUCTS AND INNER DUCT

The assigned 100 millimeter 4 inch existing duct or conduits must be rodded, cleaned, and tested for alignment in a manner equivalent to that specified in TO 31W3-10-12 before pulling in the inner duct. Have a second winch line connected to the trailing end of any duct cleaning/aligning

device to facilitate removal in the event such device becomes stuck. Abandoning a stuck cleaning/aligning device in a vacant duct is not allowed under any circumstances.

When immovable objects are encountered in the duct run, items such as duct scoops, pickup, jar hammers and wire brushes must be used with chains and cleaners to clear duct in accordance with TO 31W3-10-12. Mechanical rodding equipment with proper sized cutting tools and water pressure equipment must be used as necessary to clean and align the defective or blocked orangeburg or other duct.

Pull inner duct through existing duct-manholes system in continuous sections. Field measure exact required inner duct lengths. Inner duct must be continuous with no splices, joints, couplings, or connections of any type. Inner duct must be sealed with polyurethane foam, or approved equal and placed between the inner duct and duct. In those inner duct in which cables are placed, also place this material between the cable and the inner duct. Only install one cable in a given inner duct. Trim existing and new unoccupied inner duct leaving 300 millimeter 12 inches exposed in manholes and floor vaults and sealed with urethane foam.

3.2 INSTALLATION

The assigned 100 millimeter 4-inch duct must be rodded, cleaned, and tested for alignment in accordance with TO 31W3-10-12, before installing the inner duct. Use mechanical equipment with winch lines at both ends of the section to be rodded to work the line back and forth through the duct. The 100 millimeter 4-inch existing concrete reinforced duct system at KSC does not contain pulling lines and can contain orangeburg material. Some sections could require mechanical rodding equipment with cutting tools and water pressure equipment to clean and align the duct.

3.3 CABLE RACK HOOKS

Use cable rack hooks to support and secure the cable. Where the specified method of support is not indicated, use adequate support and fasteners to secure the cable in a stable position.

Provide two cable rack hooks per manhole as a minimum.

3.4 CABLE SUPPORT

Where the specific method of support is not indicated, use adequate support and fasteners to secure the cable in a stable position.

3.5 CABLE TIES

Cable Ties: Provide the necessary length and width cable ties to properly secure and support the cable, splice cases and associated items.

-- End of Section --